Fall 2011

Volume 24 - No 3

ISSN 1042-198X
USPS 003-353

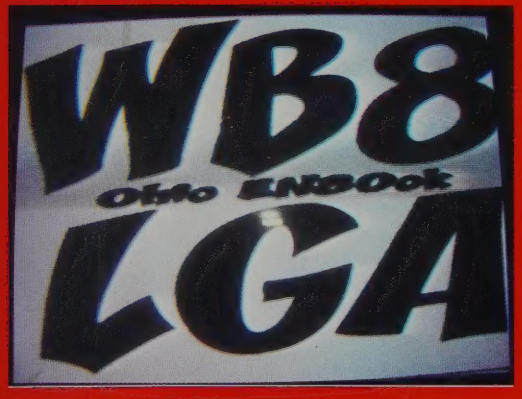
SINGLE ISSUE
$5.50 USA
$6.00 CANADA
$8.00 ELSEWHERE

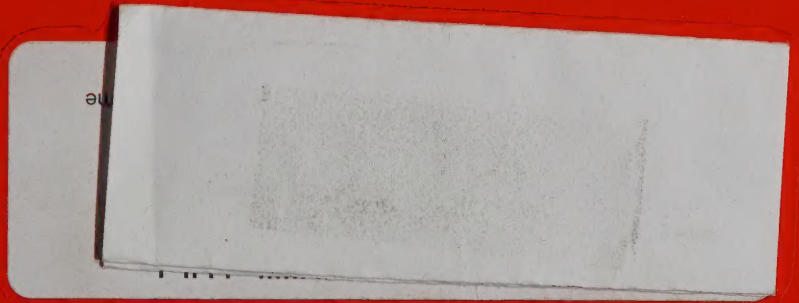
Amateur Television Quarterly

KH6HTV VIDEO DATV Review

Software Based Digital TV

ATV DX Band Opening

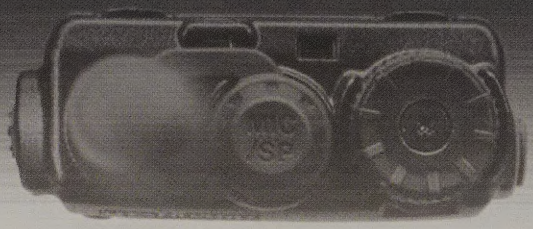




GigaParts

www.gigaparts.com

Pocket-sized position reporting and communications.



Integrated APRS Operation

Optional GPS Capability

YAESU

Choice of the World's top DX'ers

VX-8DR

For more information go to www.gigaparts.com/vx8dr

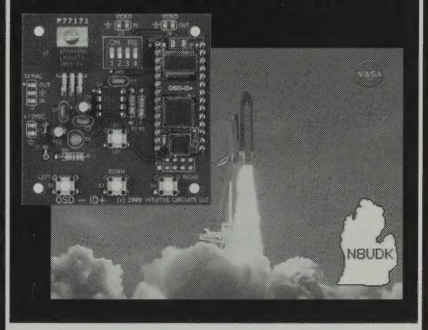
ADVERTISE IN ATVQ!

ATV'ers are hams that build projects more than other hams. They have a varied background ranging from technician to engineer, and just might see a need for your product in their regular job as well as in their hobby. I hope to hear from you soon.

Please call TODAY!

Mike Collis - WA6SVT - Advertising
RESERVE YOUR SPACE TODAY!
1-909-338-6887 - voice
email: wa6svt@atvquarterly.com

OSD-ID+
with Carrier Board



OSD-ID+™ is a single channel, stand-alone static character and graphic composite video overlay circuit. This user programmable device can display up to 30 columns by 12 rows (NTSC) or 15 rows (PAL) of text and imported graphics such as logos directly onto an incoming composite video source. If no video input source is available then OSD-ID+™ overlays text and graphics onto a self-generated background screen. The overlay can be configured to always display, appear on a configurable timer (e.g. every 10 minutes for 30 seconds), or appear on an external button press.

Included with OSD-ID+™ is font editing software. OSD-ID+™ firmware upgrades are supported via a PC connection.

$129.00

Intuitive Circuits, LLC
Voice: (248) 588-4400
http://www.icircuits.com

TV-AMATEUR die deutsche Amateurfunk-Zeitschrift

für ATV bringt in der letzten Ausgabe z. B.

- **OSD-Video-Einblendung ganz einfach**
- **Die Memoiren des ATV-Relais DB0RV**
- **Ein Besuch bei den Rosenheimern**
- **DATV-Relais DB0FT mit DVB-T**

4 Ausgaben im Jahr für 25.- Euro
bestellen per Fax: 001149 231 48992
oder Internet: www.agaf.de

TV AMATEUR
Nr.158
Funkposten und Ausflugsziel Hochries
ATV-Umsetzer DB0HOB und weitere AFu-Dienste in 1554 Meter Höhe
OSD-Video-Einblendung ganz einfach
Die Memoiren des ATV-Relais DB0RV
Ein Besuch bei den Rosenheimern
AGAF bei der HAM RADIO 2010
DATV-Relais DB0FT mit DVB-T
HDTV-News

VHF Communications

- **A Publication for The Radio Amateur Worldwide**
- **Articles Covering VHF, UHF and Microwaves**
- **Design, Construction and Testing Information**
- **PCBs and Kits Available**

Four magazines per year, £19.00 cash or £20.00 credit card, including surface mail delivery

For more information or to subscribe – http://www.vhfcomm.co.uk
email - vhfsubs@vhfcomm.co.uk

63 Ringwood Road, Luton, Beds, LU2 7BG, U.K. tel / fax +44 1582 581051

US subscribers please order from: www.atvquarterly.com
US price: $37 surface, $44 airmail

If You Move

Please send us your NEW ADDRESS! We pay 70 cents for each returned ATVQ. And we are usually nice and send another copy to your new address which costs us $1.29. Please help us from having to do this. Thanks!

AMATEUR TELEVISION QUARTERLY

Published by
ATV Quarterly

Publisher/Managing Editor
Bill Brown - WB8ELK
Publisher/Technical Editor
Mike Collis - WA6SVT

Editor
Art Towslee WA8RMC

Art Emperor
Jeff Brown - N8UEJ

Subscriptions / Advertising
Mike Collis WA6SVT
P.O. Box 1594
Crestline, CA 92325
(909) 338-6887 - voice
email: **wa6svt@atvquarterly.com**

Article Submissions / Ad copy
Bill Brown WB8ELK
107 Woodlawn Dr.
Madison, AL 35758
(256) 772-6000 - voice
email: **wb8elk@atvquarterly.com**

Website:
http://www.atvquarterly.com

Amateur Television Quarterly (ISSN 1042-198X) is published quarterly, in January, April, July, and October for $20.00 per year by ATV Quarterly Magazine, P.O. Box 1594, Crestline, California 92325. Periodicals Postage Paid at Crestline, CA and additional mailing offices. POSTMASTER: Send address changes to: Amateur Television Quarterly, P.O. Box 1594, Crestline, CA 92325.

Amateur Television Quarterly is available by subscription for $20.00/yr in the USA; $22.00/yr in Canada; $29.00/yr elsewhere. Single issues $5.50/USA; $6.00/Canada; $8.00 elsewhere.

Amateur Television Quarterly
TABLE OF CONTENTS

Sync Buzz Editorial	5	***Bill Brown WB8ELK Mike Collis WA6SVT***
KH6HTV Video Equipment Evaluation	6	***Mike Collis WA6SVT***
Software Based Digital Television	12	***Grant Taylor ZL1WTT***
VUSB TV or AM TV?	19	***Jim Andrews KH6HTV***
ATV DX - Aug. 2nd	24	***Bryan Dygert KC8LMI***
Crossword Answers - Operating ATV	28	***Bill Brown WB8ELK***
Publisher's Statement	32	***ATVQ***
Advertiser Index/ATVQ Stores	33	

Sync Buzz Editorial

- Bill Brown WB8ELK and Mike Collis WA6SVT

Digital TV

This issue we introduce a unique new product line from KH6HTV Video. They offer VSB AM ATV transmitters, linear amplifiers as well as a new DATV transmitter that uses the DVB-C QAM64 format. This has the advantage that any digital TV or tuner can copy the signal directly with nothing more than a preamp.

Check out the review article on their new products along with a mobile test of their system in the mountains of Southern California.

ATV DX news

For those of you who love to chase ATV DX, we have photos from a massive band opening that covered the Midwest from Kansas City, MO to Michigan and all the way down to Bowling Green, KY. Another big opening just occurred on the morning of Thanksgiving Day as we could see commercial digital TV from hundreds of miles away here in Alabama. If anyone has any reports of photos from the Thanksgiving Day DX opening, please forward them to ATVQ.

Subscription Price Increase

We've been running full color issues this past year on a trial basis. The feedback has been overwhelmingly in favor of keeping full color issues. It costs us 20 percent more to print in full color so we've decided to increase the yearly subscription so that we can continue to offer a full color magazine. The new rate will be $22 a year for the US. Canadian rate will be $25 and DX will be $32.

The new rates will go into effect by February 1st, 2012 so if you send in renewals before that date, you can take advantage of the old rate.

Preview of the next Q

We take a photo tour of the Early Television Museum in Hilliard, Ohio. Next time you are attending the Dayton Hamvention, this is a must-see road trip.

We will also be featuring more DATV news and articles including news of the first Worldwide DATV QSO Party and how it was done.

As always, please send us ATV news from your area as well as technical and operating articles.

Stay Tuned,

- Bill and Mike

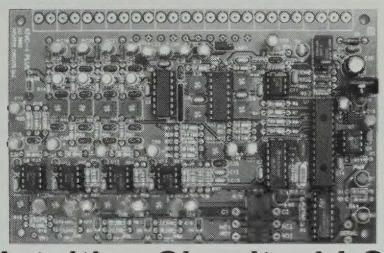
ATVC-4 Plus

Amateur Television Repeater Controller

ATVC-4 Plus is Intuitive Circuit's second generation Amateur Television repeater controller. ATVC-4 Plus has many features including:

- **Five video input sources**
- **Four mixable audio input sources**
- **Non-volatile storage**
- **DTMF control**
- **Beacon mode**
- **Robust CW feedback**
- **Password protection**
- **Many more features**

For example a major new feature is four individual sync detection circuits allowing for true priority based ATV receiver switching.
$349.00



Intuitive Circuits, LLC

3928 Wardlow Ct. - Troy, MI - (248) 588-4400

http://www.icircuits.com

THE R. F. CONNECTION

"specialist in
R F Connectors and Coax"
http://www.therfc.com

301/840-5477
Fax 301/869-3680
e-mail: rfc@therfc.com

Order Line 800-783-2666
Suite 11, 213 N. Frederick Ave.
Gaithersburg, MD 20877

KH6HTV VIDEO EQUIPMENT EVALUATION by WA6SVT

A new ATV manufacturer has entered the market with impressive transmitters. Jim Andrews of KH6HTV Video (www.kh6htv.com) sent us two transmitters to test. The first one is a vestigial sideband analog transmitter (upper sideband) and the other is a digital QAM 64 standard and high-definition transmitter.

Upon opening the shipping box I was impressed with the nice clean modern looking equipment. Rather than putting everything into one box he has taken a modular approach with a separate exciter and amplifier. This allows the option to use the same amplifier for either the analog VUSB exciter or DATV exciter. He also has a selection of amplifiers from less than 1 watt to 25 watts.

The 70-3 DATV exciter and 70-2 VSB analog exciter for this evaluation came with his 70-6 model five watt peak sync analog, 1 watt average digital amplifier. All of the equipment is set up for 12-14 VDC operation and the amplifier has voltage regulators to power the modulators from this single source. That makes it great for mobile, portable and base station use. Build quality is commercial grade so I had to take a peek inside.

The VSB modulator has RCA audio and F connector video inputs. The RF output connector is type F. The DATV modulator has HDMI, VGA (with loop through), RCA component high definition inputs and a composite (analog) standard definition video input. Audio inputs are RCA stereo analog, optical S/PDIF digital and embedded audio via the HDMI connector. Input selections are via the menu. The amplifier has an SMA input and N output.

Both modulators use PLL frequency selection on CATV channels 57 though 61 for the 70cm band. They are extended range covering broadcast and CATV channels. The DATV exciter extends all the way to 1 GHz allowing use on the 33 cm band as well but the amplifier is 70cm band only. This frequency plan works out great for 421.25 MHz CH-57, 427.25 MHz CH-58 433.25 MHz and 439.25 MHz CH-60 ATV channels.

Many areas use either 426.25 or 434.0 MHz channels and Jim recently reported that he can now offer USA hams a 434.000 MHz and 426.250 MHz frequency option.

Most DATV operation currently in use operate utilizing DVB-S format (QPSK modulation) using a MPEG encoder, MUX, exciter and amplifier boards to generate one or two streams of standard definition resolution video.

KH6HTV Video has taken a different approach by using DVB-C format QAM 64 modulation used in the CATV industry with both standard and full 1080i high definition capability. This format also allows you to use existing digital TV sets not only as the 70cm band receiver using analog mode CATV channels but DVB-C CATV mode.

Add a low noise preamp to get maximum performance. Both analog VSB and digital formats require a very linear amplifier for minimum spectrum regrowth. In the case of analog, this would be noticed by seeing the lower aural carrier first then some video sidebands starting to grow back in the lower sideband area. Digital would show up as noise shoulders growing above and below digital channel.

THE AMPLIFIER

The 70-6 transmitter amplifier submitted for evaluation uses a class "A" driver and a class "AB" final amplifier operated well within the linear region of the active devices. Amplifier performance is the key to the transmitter's signal remaining clean with low distortion and will be the first item to test.

I usually run two tests; linear amplitude for gain flatness as the power is raised to rated output and intermodulation distortion using a two tone test procedure. The amplifier's output device is rated for 12 watts saturated so I ran it up to 10 watts. It had no difficulty reaching that level but I did not want to push the amp any harder. Before I get to the details, I'll go over some of the terminology for those who are not RF geeks.

Compression (non-linearity) occurs as the amplifier is driven harder and a true linear amplifier is usually rated as power output at the 1dB compression point. In most cases the saturated output is at a much higher output. Intermodulation distortion will show up as noise both within the desired channel and outside the channel and is sometimes referred to spectrum regrowth (See ATVQ Spring 2010 issue, pages 18-20 for details about amplifier linearization).

ANALOG PERFORMANCE

For the analog test I used the following:

1. Bird 43 with peak reading circuit
2. HP-435C power meter and calibrated power attenuator
3. IFR-930C spectrum analyzer and calibrated power attenuator
4. Leader LCG-400 video waveform Generator
5. B.T. AD-1 CCTV NTSC demodulator with nyquest IF filtering and synchronous detector
6. Tektronix 1730 waveform and 1720 vector monitors
7. Sony studio video monitor

First test was gain flatness and second one was intermodulation distortion (IMD) using the VSB modulator at factory settings and with supplied 3 dB and 6 dB pads between the exciter and amplifier.

Cont. on Page 8 ⟶

I chose to run a modified two tone test, rather than two equal signals in the normal method. I used the aural carrier at -15db below the visual carrier as this would best reflect actual spectrum regrowth in use. IMD viewed with a VSB TV signal has its 2nd order seen within the 6 MHz TV channel usually as a 920 Hz beat or cross hatch between the color subcarrier and the aural carrier. The 3rd order is seen below the visual carrier as a lower aural carrier and video sidebands (starts to look like AM instead of VSB), 5th order is seen 2x the separation of the visual and aural carrier ±9 MHz from the visual carrier. Each order higher is seen as less amplitude.

AMPLIFIER:

PARAMETER	MANF. SPECS.	AS TESTED
1. Power output: (depends on freq. selected)	5W	4.5–5W
2. LSB: (lower aural -36 dBc)	-20 dBc	-22 dBc
3. LSB@2.5W: (lower aural -43 dBc)	-32 dBc	-33 dBc
4. LSB@1.25W: (lower aural -47 dBc)	not listed	-------
5. LSB@0.5W: (lower aural -48 dBc)	not listed	-------
6. 5th order IMD: (@ 5W output)	not listed	>-57 dBc
7. Spurious:	>-70 dBc	>-70 dBc
8. RF phase noise:	>-70 dBc	>-70 dBc
9. Harmonics:	>55 dBc	>-55 dBc
10. Duty cycle:	100%	100%

This is a good performing amplifier for a small 12 volt portable system. If used on 421.25 MHz, this transmitter will achieve -38 dB out of band specification for Amateur part 97 when the output is at four watts or less or at 5 watts with an external filter or simple lower aural trap.

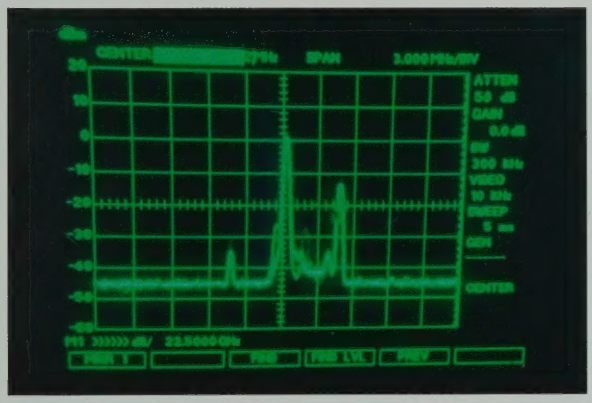
This is much lower IMD performance than previously manufactured VSB ATV transmitters from two decades ago. The VSB modulator or as Jim likes to call it VUSB (upper sideband VSB) is a CATV quality modulator with a separate visual modulator at 45.75 MHz with VSB filtering and an aural carrier at 41.25 MHz. Both carriers are then combined after modulation and heterodyned to the operating frequency. This provides the best way to generate an analog TV signal short of separate visual and aural transmitters and antennas.

The aural carrier is set to 25 KHz deviation with ½ volt peak to peak audio and visual modulation at 87.5% with 1 volt P-P video. Both levels can be changed via small screwdriver adjusted pots on the front panel but it should be noted that the modulator levels are calibrated at the factory using quality test equipment most of us do not have. Also the reason for 87.5% visual is required for RF headroom for bright colors that extends above 100 IRE white video level (= the 85.7%) and some carrier is also needed at the receiver to generate a 4.5 MHz sound IF in the TV receiver.

Some DXers like to over modulate with white at 100% (RF cutoff) and do not need to worry about audio. I would suggest a video buffer amplifier ahead of the transmitter with a switch to go between 1 volt and 1.2 volts p-p on the video and use

the 1.2v p-p for the DX mode where you would not care about picture quality or sound.
The front panel pots are the type to set once and forget and not to be adjusted daily. I did not observe any beat pattern between the color and aural carrier in heavily saturated color, the aural / visual carrier ratio is set at -15dBc (it's adjustable on the front too) audio is good copy even at 50% snow in the picture.

With the aural carrier set at -12dBc (using a spectrum analyzer) it will give sound detection at lower picture levels but at a price of higher IMD levels.



5W spectrum response using camera video

The bottom line is that this analog transmitter will give you CATV quality picture and sound, about as close to analog broadcast TV used to be. I had planned to comment about the CATV modulators not having 434 or 426.25 MHz option but after the evaluation Jim emailed me to say he offers an option to include these frequencies if needed. This transmitter rates about as high as any I have used or tested.

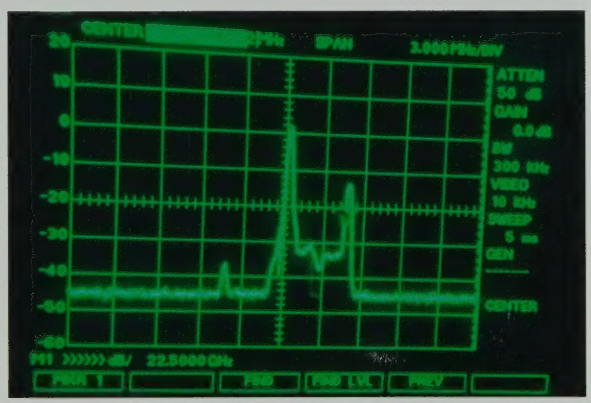
I should note you can use this amplifier with existing VSB modulators too.

The transmitter has only line level audio input perfectly suitable for a camcorder with its built in microphone and mike preamp but you may want to use a microphone mixer (most have a VU meter) and desk, lapel or hand held microphone for best audio.

For QRO operators, KH6HTV has a 25 watt amplifier available. You could drive a Mirage D1010 with this transmitter but the IMD of your signal will be worse but performance would be no worse than AM and most likely better.

This transmitter would work as a repeater transmitter at 421.25 MHz but I would recommend a channel filter as federal government radios may be at the same or adjacent site.

As clean as this transmitter is you need to be at least -80dBc or better with any emission below 420 MHz and any white noise on your 70cm ATV input channel and other 70cm radios or repeaters at your repeater site. The amplifier has a high speed fan that keeps it barely warm during operation.



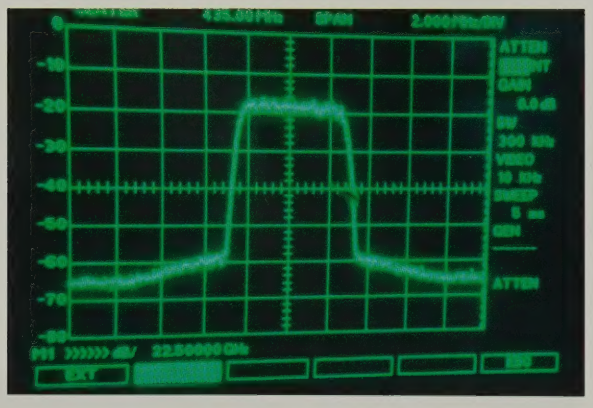
5W spectrum response using multiburst

Cont. on Page 10 ⟶

DATV PERFORMANCE

Now for you ATVers wanting to purchase a DATV station, the 70-3 digital TV exciter is here. This exciter uses QAM 64 modulation for both standard and high definition DATV. The box has digital and analog inputs, MPEG encoder, MUX, modulator and an up-converter all in one compact easy to use box.

It uses the same amplifiers as the analog VSB transmitters do making an analog and digital ATV station an "F" connector connection or A/B switch away. It should be noted that QAM is not compatible with DATV systems using DVB-S format with QPSK modulation.



1W average QAM 64 Spectrum response

QPSK systems have about an 8-10 dB lower threshold due to the fact that it runs at a much lower data modulation rate which allows a noisier and greater multipath signal to be decoded. QAM 64 uses Reed Solomon forward error correction, interleaving and trellis coding.

This error correction is commonly used in most digital video modulation modes.

QAM 64 has been used extensively for wireless digital cable TV in the 2.5 to 2.7 GHz bands over paths out to 40+ miles from the transmitter with great results. It is used in point to point digital microwave systems too.

Even with the higher order modulation of QAM 64 and needing a bit more signal than QPSK, 70cm has better penetration and 9 dB less path loss than the 23 cm band QPSK systems. This helps equalize out the performance between the two modes.

The larger three times capacity digital pipe that QAM 64 modulation provides as compared to QPSK (even higher than 8VSB) allows full high definition DATV. Now you can use your new HD camcorder to its full potential on ATV. Use your existing digital TV set for the receiver by setting in the CATV mode and with a preamp get maximum sensitivity for DXing.

The modulator's audio / video selection is done from the front panel or if left in the "auto select" mode it will scan the inputs and select the correct encoding for that input. However, to select analog composite NTSC you plug it into the green component input and then via the menu, select "composite".

The amplifier is rated at 1 watt average. The peak power, is about 6 to 8 dB above average but for digital, average power is what is measured and best done with a thermal power meter and calibrated attenuator. The transmitter output is 1 watt as measured at ATVQ.

FIELD TESTS

Bench testing is now complete so normally this would be the end of the evaluation. However, due to the fact this is new mode, the manufacturer asked if we would run some real world over the air testing. CATV channel 59 was used as this is the closest frequency to our 434 MHz ATV channel here in California. The antenna system used is a triband vertical with 135 ft of 7/8 Heliax.

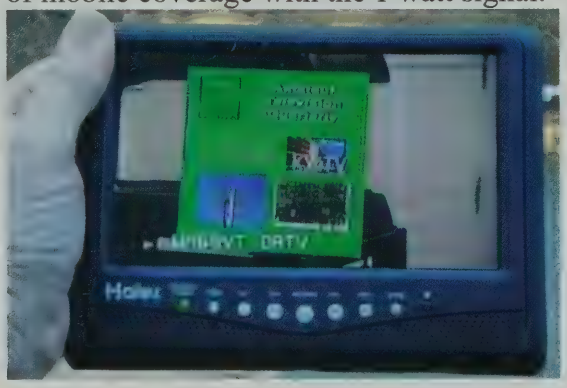
The antenna is at 125 ft. above ground at my mountain top QTH 5300 ft above sea level and an average height about 4000 ft above San Bernardino on the south side and 3000 above the desert on the north side. Mountain ridges and valleys are to the west and east.

Portable DATV @ ¼ mile

The mobile/portable setup is a digital TV set with an Angle linear 70 cm preamp and mobile 5 dBi whip. Don KE6BXT used his portable HDTV. We first walked around Jobs Peak area and found the picture good most of the trip with a few interruptions when we were non line of sight in the mountain terrain. We then drove off the mountain towards Lake Silverwood, Summit Valley and City of Hesperia off towards the northeast.

Near Lake Silverwood we had good lock-up of the QAM 64 signal while mobile at 55 MPH. Bushes, small trees, power poles and mountains all around us did not bother the signal. We lost the signal going down below the lake into a valley but quickly picked it up again just before we cleared line of sight.

Out in the open but with hills and cliffs nearby we had good lock on the signal all the way into Hesperia about 15 miles out. We did find that mobile operation in the city on residential streets with homes and large trees was not good. We were near the limit of mobile coverage with the 1 watt signal.



Portable DATV in mountain terrain

DATV @ 12 miles going 55 MPH

Thanks to Don KE6BXT for field testing and photos and Art WA8RMC for editing.

73, Mike WA6SVT

SOFTWARE BASED DIGITAL TELEVISION

BY GRANT ZL1WTT

Background:

This technology has been around for about 25 years now. The first time I remember coming across software base decoding and encoding was with my ZX Spectrum computer. This software could demodulate Morse code and display the text on the video screen. There also was the ZX SSTV program that operated in and out of the audio ports.

The next big step came with 386/486 IBM type computers where you could run DOS programs like EZSSTV and Jvfax. These programs were able to work with standard SSTV modes already in use. All that was needed to demodulate and modulate these modes was the Ham-com interface that was driven from the computer's com port. By the mid 1990s sound card programs became available such as PSK31 and soon after a number of newer programs for SSTV and other modes.

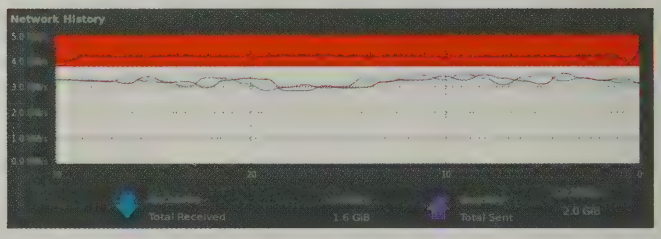
Introduction:

The same old problem that we have all run into with DATV is the cost of Digital Video Broadcasting (DVB) equipment. This is where I started thinking of alternative ways of putting together a DATV transmitter. I had installed a satellite tuner card on one of my computers a few years ago and was able to stream out the multiplex onto my LAN network. This lets me view any free to air channels on any of my computers in the house. If I can do it this way, why can't I do this in reverse using an MPEG-2 encoder card and stream it to a QPSK modulator. This project uses standard PC technology, unlike hardware based DVB equipment that uses high speed logic array chips to do the much the same job.

Software description:

MPEG encoding is defined in software as well as the multiplexer. These stages are set by software using Ubuntu Studio 11.04 this is a form of Linux used as the Operating System (OS), using shell script files. The code used is based on C programming language and lets me plug into various software modules. Data packets are assembled as a DVB transport stream made up of 188 bytes that can be sent to or from any device on the network such as Xbox Media center or any number of computers. This is where I took advantage of the User Datagram Protocol (UDP). This protocol is ideal for sending DVB packets.

As the name suggests the user sets the packet framing and any handshaking that maybe required. All that the UDP does is set up the IP address to send to and do the port mapping. In this form the UDP will be able to run over the network within the LAN IP structure. To recover this data I use an Internet Protocol (IP) to Asynchronous Serial Interface (ASI) converter. This converts to an ASI signal to feed into an L-band (950 to 2150 MHz) Quadrature Phase-Shift Keying (QPSK) modulator. By taking this approach I have kept the cost down to a minimum, where by most of the parts were sourced from Trademe, a local form of EBay. Items such as MPEG-2 encoder cards, Satellite tuner cards and a computer are needed to run the required software.



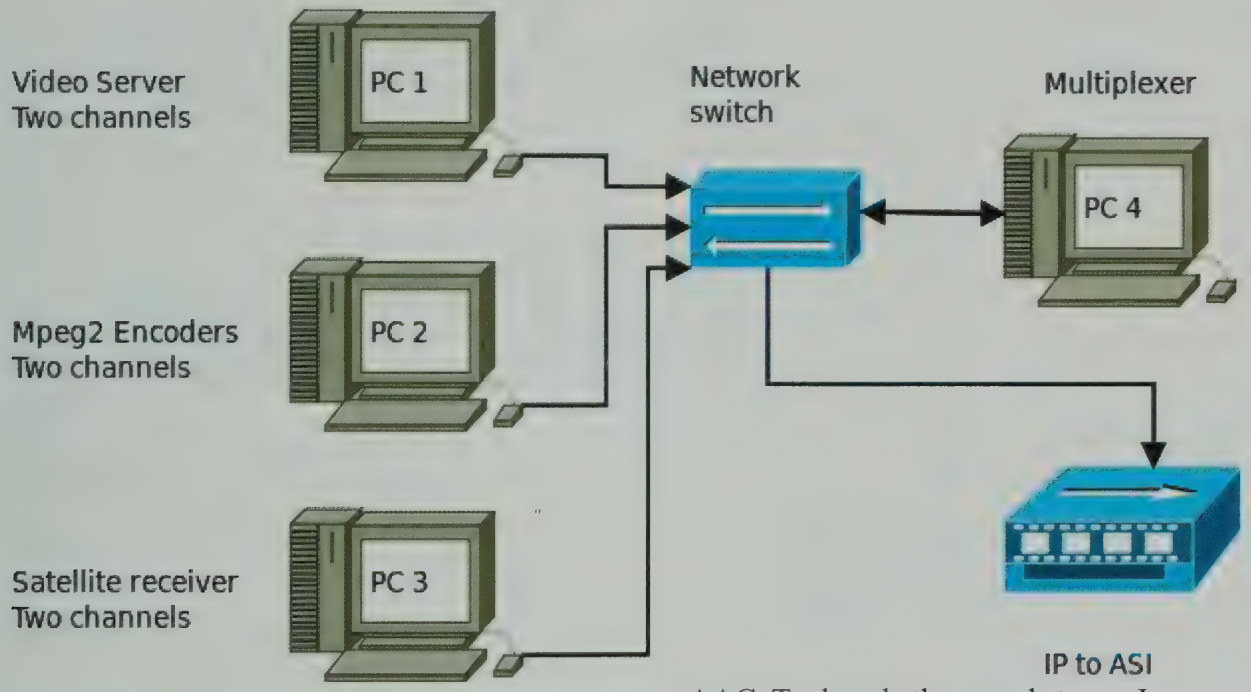
This is a screen shot showing the amount of data moving in and out of the multiplexer on the network. The red block at top shows where the data will be clipped by the modulator. My maximum data through put is set by the modulator settings in the form of the symbol rate.

Experimentation:

I stacked up to six SD and one HD channel using h.264 compression. With this many channels I kept using more than the maximum data bandwidth I had. I decided to drop the HD channel and found six channels of standard-definition was good number to experiment with. The problem I came across

was that I needed more head room on the modulator side, my peak data rates were getting up to 32M bit/s. This is why I move to the same setting that NZ Freeview and Sky are using (22.5M Sym/s 3/4FEC). By reworking some of my Mpeg encoders and limiting the peak bit rates I found that I could add in another channel. My setup now looks something like this:

CH 1 looped play-list files in MPEG-2 format
CH 2 looped play-list files in MPEG-2 format
CH 3 MPEG-2 encoder card encoding video from my VCR
CH 4 Satellite feed from Satellite receiver card
CH 5 Satellite feed from Satellite receiver card
CH 6 Off air UHF receiver Mpeg2 encoder
CH 7 NASA TV



To get these seven channels to work as a multiplex TS stream, I used four computers on my LAN network. When I was at the Technology Convention 2009 I talked about how to use play-list files for ATV, this is how I configured channels 1, 2 and also for the HD channel with promo clips. My server feeds channels 1 and 2; another computer has the Satellite receiver card installed for this feed. These Computers all feed their channels to six different ports on the one IP address. On this IP address where my laptop is located, acted as the Multiplexer and recodes the PIDs (Packet Identification headers). This is basically what a Multiplexer does; I also used the laptop to add in the NASA stream. This multiplex stream is then fed to another IP address where the IP to ASI box is located.

One of the things of interest I came across is the flexibility of the DVB transport stream. As long as the receiver is capable of decoding the form of compression used, there is wide range of formats that can be used within the DVB standard. I tested MPEG-2, h.264, AC3,

VPID 100	APID 101
VPID 200	APID 201
VPID 300	APID 301
VPID 400	APID 401
VPID 500	APID 501
VPID 600	APID 601
VPID 700	APID 701

AAC. To decode the sound stream I connected my Satellite receiver via digital audio out to my home theater system. To decode h.264 video and the AAC sound I used another computer with a Satellite tuner card installed.

Second of many advantages working in software, there is no loss in video quality from the stored MPEG-2 files to what is displayed on the receiver. Another is I can change the configuration by simply clicking on the shell script file. Being defined in software gives me the freedom to reconfigure a large number of settings without to many problems, such as:

Cont. on Page 14

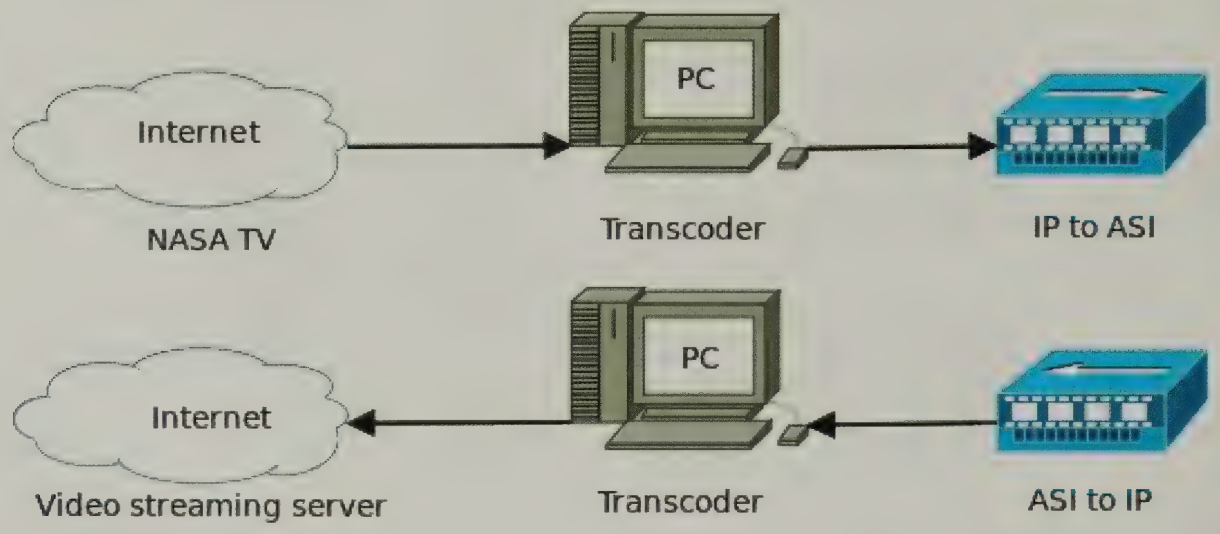
MPEG-2 Encoder card
Size, 352 x 288 or 720 x 576
Bit-rate, 1 to 12M b/s
Frame rate
Video input, Tuner, Video or S-video
Coding format, VBR or CBR
and so on

Satellite receiver card
Frequency, 950 to 2150 MHz
LNB volts, 14 or 18
Symbol rate
FEC, 1/2, 2/3, 3/4, 5/6 or 7/8
PIDs
and so on

IP and port
Set, IP address and port
Packet format, UDP or RTP
Stream format, TS or PS

Multiplex
Number of channels
Channel names
PID information

Internet Streaming:



With the growing interest in feeding NASA TV through ATV repeaters via the Internet, let's face it, it's a lot more interesting than looking at beacon test card IDs all the time.

There is no longer a need to feed out NASA TV as an analog video signal from a PC or your Xbox media center. The way this is done is by decoding the Mpeg4 stream and re-encoding it to Mpeg2 in a DVB TS format per the diagram.

Again this process can be done in reverse, by receiving a digital signal from your local repeater via a DVB capture card and simply re-encoding to feed a streaming server. One downside of using Linux is limited support for Adobe flash player and streamer. Therefore I have had no luck with BATC streaming. Maybe in the future the BATC may look at more of an open streaming format so this can be done.

Hardware:
Cable Television (MATV/CATV) systems can be based on coaxial, fiber and Unshielded Twisted Pair (UTP). The coaxial takes the form of 75Ω coax as RG-6 or RG-11. Fiber cabling could be used in the form of analog or digital transmission and the UTP is in the form Cat-5 or Cat-6 cables. I have been involved with cable TV systems and have a good understanding of what types of equipment is currently available.

By taking this approach I started looking around on the Internet to find cable TV equipment. I knew what I was looking for and what I needed it for. I soon found wide range of cable TV head end equipment with a price ranges to match. I soon narrowed my search

down to three companies based in China and one of them had just what I was looking for an IP to ASI box. This IP converter receives and removes the DVB data from the UDP packets and converts to 188/204 ASI out at 270M b/s. The ASI standard adds null packets to pad out the usable data to bring it up to the correct bit-rate.

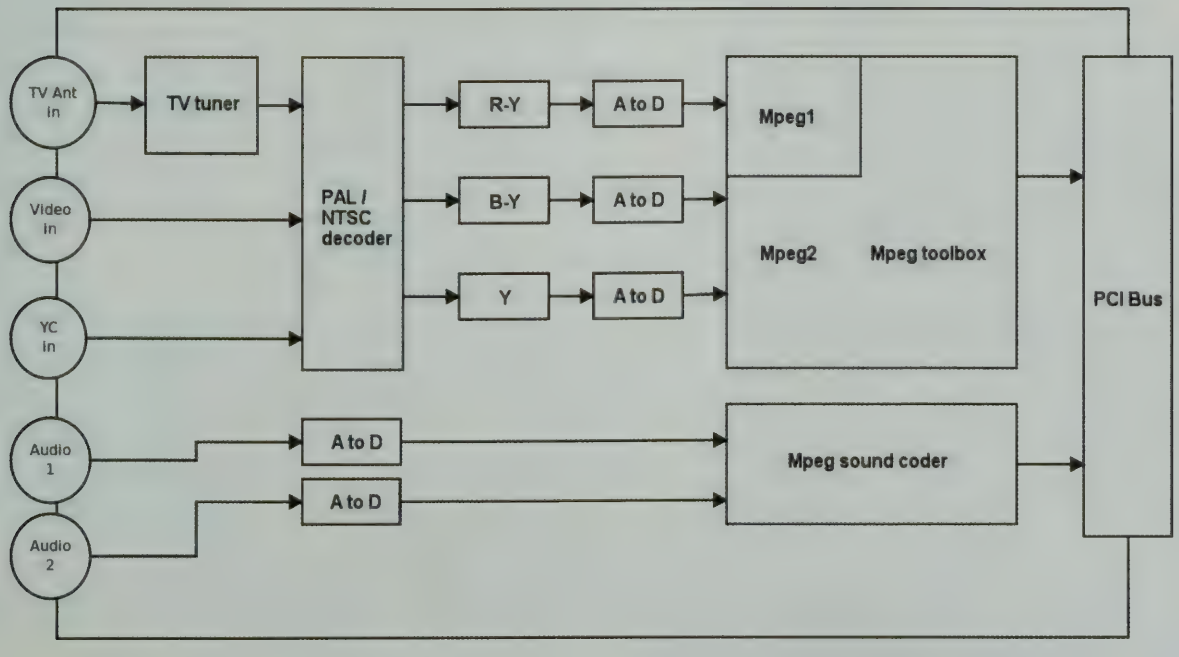
For the modulator I planned to use my Radyne DVB-3030's and soon found this modulator uses a non standard ASI input. So I contacted my suppler in China and imported a cable TV L-band modulator. When I connected it up I got ASI lock without any problems. Then it was a simple case of setting the frequency, Symbol rate and the FEC.

Computers used were Pentium 4 2 GHz core speed with 1GB of RAM. The video server has 500 GB hard drive installed with 25 GB set aside for the operating system and other 475 GB formatted as XFS file system. These are not new computers; most were rebuilt from second hand hardware. Make sure that your Ethernet card has minimum speed of 100M b/s. You can set up encoders and a multiplexer on one computer to do this in software. The layout is very flexible. All that is required is PIDs (Packet Identification) setup within the MPEP TS settings. To keep it simple I set my PID's starting at stream 1 at 100, stream 2 at 200, stream 3 at 300 etc.

On the receiver side I tested a number of Satellite receivers to compare their performance. I soon found what was useful to have for scanning in Satellite transponders is not the case for ATV applications. I only found two types of set-top boxes that were any good. These were Phoenix and Strong. Both of these manufacturers allow you to add PID's manually. Others would let you edit PID's but not add new ones in or there was no manual functions available at all. What is needed is a quick way of adding in new settings on the fly, simply because you never get ATVers to use one common transmission standard.

Encoder:

Here is a block diagram of my MPEG encoder card. It does not matter how you end up with a MPEG stream as long as it conforms to the MPEG standard and the decoder will display a picture. The MPEG data could come from any source such as Precoded file, DVD, DVB or MPEG encoder. It's important to think about how you feed analog video into your MPEG encoder with the understanding that video is a compressed format to began with. This is why with these WinTV cards I always feed Y/C in (S-video) to minimize the amount of frequency roll off. Another thing to remember is that MPEG compression is movement based, always try and avoid feeding in noisy signals! Otherwise you will end up with nothing more than colored blocks.



Continued on Page 16

The WinTV PVR-150 has a Conexant MPEG-2 chip (CX23416) with on board SDRAM (M12L64322A) on this plug in card making up a ready to go encoder for DATV.

Both input PCI cards are made by Hauppauge and available under name of WinTV.

The card on the left is the satellite receiver called the Nova-S plus, on the right is the PVR-150 MPEG encoder.

Also I've tested the USB-2 MPEG-2 encoder the WinTV HVR-1900 or the US version HVR-1950

I

Software encoding:
Currently I'm working with high quality broadcast encoding whereby I remove the need for analog video all together. This is done with a play list or via DV-1394 fire-wire and is trans-coded on a computer. By taking this approach SD pictures can look more like HD without running HD. With the FFmpeg you are able to set encoding levels and formats like h.262 or h.264 base on what processing power you have available.

Levels:
With these experiments I've proven the importance of getting levels right. Once you have encoded the analog signals there is no easy way to change them. This is why I have an audio level meter in line at all times, checking that I'm not overdriving the sound inputs of the encoder and on the video side I can switch in a video waveform monitor as required. If you have a digital receiver at a repeater site you will also need to set these levels at:

Video 1 volt P-P into 75Ω
Y 1 volt P-P into 75Ω
C 0.3 of a volt P-P into 75Ω
Audio no more than (0.78 of a volt) or 0dB into 600Ω

There have been many times I have come across streams on the BATC website where the sound is overdriving or at a very low level. The same rules apply.

Software used:

Ubuntu Studio 11.04	Operating system
VLC	Video streamer
dvblast	Streaming application for DVB cards
libdvbpsi	DVB TS Multiplexer
WinFF (FFMPEG GUI)	File converter
Ubuntu remote desktop	For remote access
TMPGEnc Editor	Mpeg file editor running under WINE
TMPGE Plus 2.5	Mpeg rendering tool running under WINE

A good place to start would be to install Ubuntu Studio 11.04 or higher on a spare computer and give yourself a month or so find to your way around this OS. To install software is a simple case of going into the Ubuntu software center and selecting the required software to be installed.

A basic understanding of local area networks:

This should be part of the Ham exam. We all need to have an understanding of LAN Networks these days. To stream video around a network it must be over UTP not Wi-Fi so a wired network is required. It's also important to have all devices set to a static IP address on your internal network. DHCP will have all kinds of problems if you don't limit its IP range or disable this function.

This is not a simple process at all to get working. There are many points where things can go wrong and sometimes do. I had a number of emails asking me how this all works. You need to have some understanding on LAN networks IP address, Linux and how DVB transport streams work. It is low cost but it's not a case of installing a program and all goes well. I'm sure this will improve over time with the software that is been used.

Shell script files:

Setting up shell script files will take a lot of your time to get it right. There is a good amount of information at http://wiki.videolan.org/ on how to do this.

I'm in the process of putting together a PDF file showing how these shell script files are laid out and configured.

Where to next:

Mark ZL3JVX has been busy with a DigitiLiteZL project based on the BATC's DigiLite layout. The plan is to incorporate a lot of my work in software with a QPSK modulator. If this is successful, DATV should become as simple to change or upgrade like any other digital mode. This is where the DigiLite project falls short as there is no easy way of feeding in a transport stream.

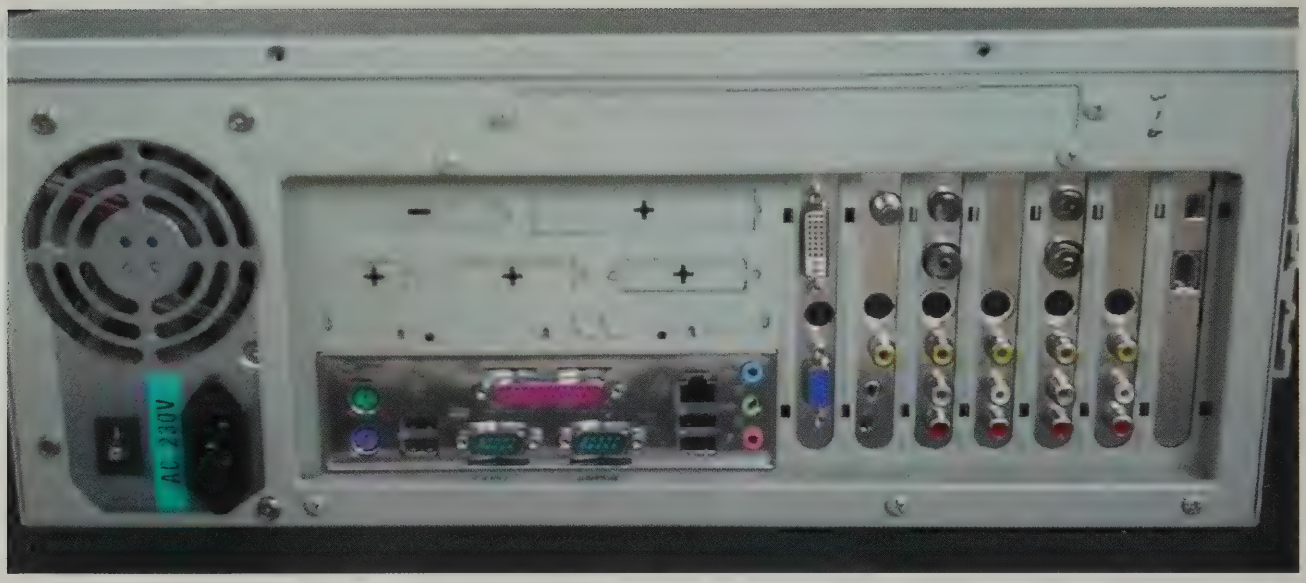
http://www.idesignz.org/DigiLiteZL/DigiLiteZL.htm

Text / Drawings Copyright (C) 2011 Grant ZL1WTT

Auckland DATV repeater project:

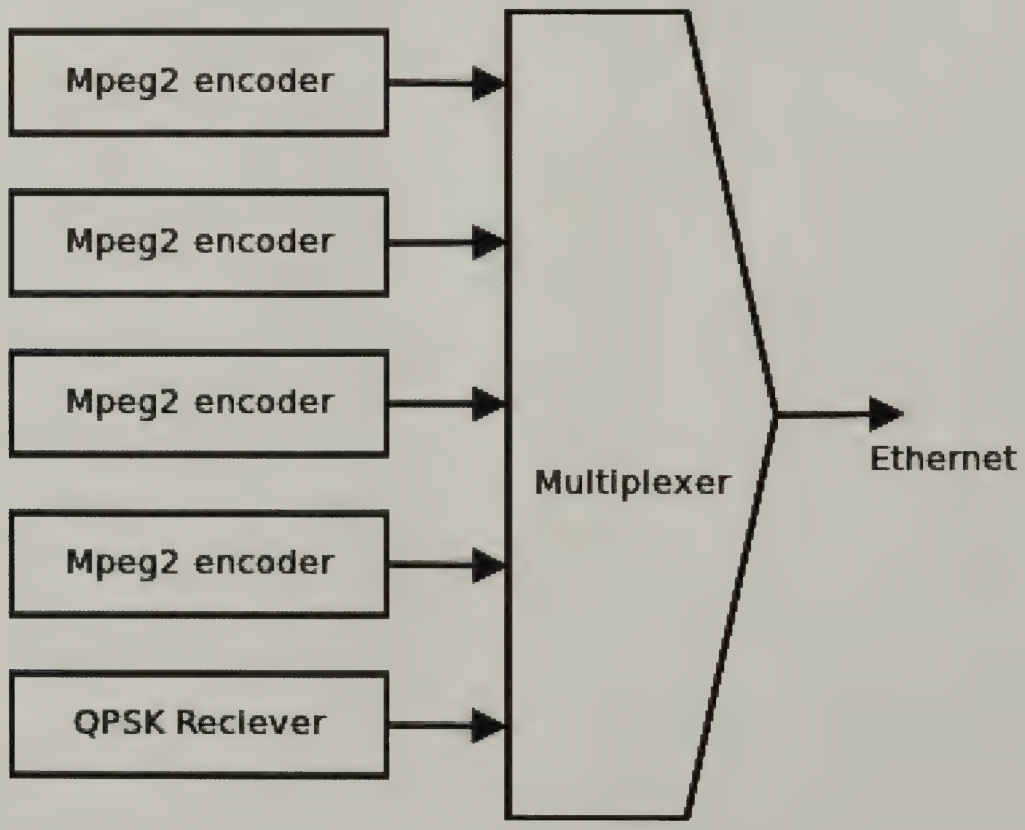
With the high expense of DVB equipment there is now a need to find alternative mends to build something for a repeater. My first option would be hardware based equipment but the cost would be too high for the ATV group or most radio clubs for that matter. Doing anything in software always comes with reliability problems. One way to minimize this is to remove anything that is Microsoft based. Then you are left with the hardware that could fail like the hard drive or the power supply and so on. Using Linux I can configure the OS to auto boot, login and run the shell script file containing the device settings. The photo is of the back-panel with four AV inputs.

Cont. on Page 18



This is my assembled prototype for DATV repeater setup inside a 19 inch rack computer case. It has four AV inputs, one QPSK receiver and two IEEE1394 fire-wire inputs. The mother board is a 2 GHz Pentium 4 CPU with 2GB of RAM running Ubuntu 11.04 as the operating system. The DVB output stream is connected via the Ethernet port to layer one ASI converter.

The block diagram below shows the internal, layout and software configured as a five input multiplex.



VUSB TV or AM TV ?

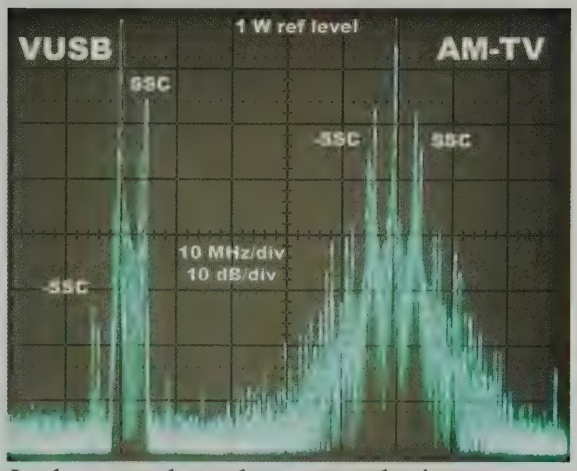
Jim Andrews, KH6HTV
kh6htv@arrl.net

Why should we use VUSB (Vestigial Upper Side Band) instead of AM for our ham TV transmitters? Two words, "**SPECTRUM CONSERVATION**".

This spectrum analyzer photo shows a comparison between two commercial, 1 Watt, 70 cm, ham TV transmitters. The scales are 10dB/div and 10 MHz/div. The top ref. line is +30dBm (1 watt). The signal on the left is from a VUSB TV transmitter while the signal on the right is from an AM TV transmitter.

Per the FCC, commercial broadcast stations must confine all of their emissions, either analog TV or digital TV within a 6 MHz wide channel. Therefore, analog TV uses VUSB to suppress the lower portion of the double sideband signal. The photo shows very dramatically that a ham AM TV spectrum far exceeds 6 MHz.

In Boulder, Colorado, the local ARES group (BCARES) oftentimes is called upon to provide to the police, sheriff, or fire agencies video pictures from four separate cameras simultaneously. With VUSB, we are able to put simultaneous transmitters on four adjacent, 70cm channels, 57, 58, 59 and 60. With the broad AM TV spectrum this would be impossible. Severe bleed-over co-channel interference would result in unusable pictures on all channels. The broad AM TV spectrum also greatly increases the probability we would create interference, and animosity, with other legitimate ham usages of the 70cm band, including SSB, FM voice, etc.



In the past, the only way to obtain a VUSB signal was to add an inter-digital, 6 MHz, band-pass filter on the output of an AM-TV transmitter. There are several major drawbacks to this:

1. Operation is limited to single channel.
2. Added 1 to 2 dB insertion loss.
3. Large, bulky, and heavy filters.
4. High cost.

For one or more of these reasons, many TV hams opt to forgo using one of these filters. Obviously, they are mandatory for TV repeaters.

Today, VUSB TV can be obtained easily without resorting to an inter-digital channel filter. There now are modern, synthesized VUSB TV modulators available at reasonable costs. They typically output 0 dBm of RF power. Using high gain, high power, linear amplifiers, they can be readily amplified up to many Watts of RF power.

ED Note: Some USA repeater inputs operate on 439.25MHz and require a LOWER sideband input signal to minimize 440-450 MHz FM repeater interference. Check your local repeater requirements before adding VUSB filtering to your ATV transmitter.

VUSB, analog TV transmitters with powers up to 25 Watts. High Definition, Digital TV transmitters with powers up to 5 Watts. For complete specifications, price list and application notes, please visit our web site at: www.kh6htv.com Maui, HI & Boulder, CO

Thinking Digital ATV?

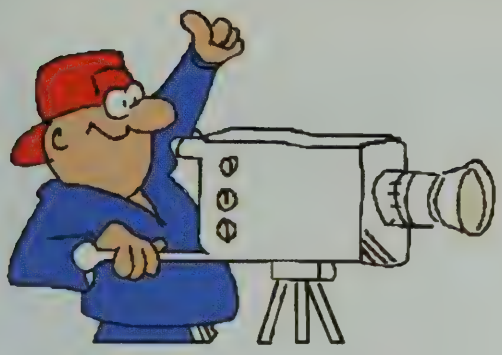
Two Digital ATV presentations from the 2009 ARRL/TAPR Digital Comm. Conference are now on DVD from ARVN. Also, WB8ELK talks ballooning, and 12 more high-tech seminars on the six-DVD set. Free preview on our web site!

ARVN
AMATEUR RADIO VIDEO NEWS

What's happening at your next ATV club meeting?

more info, free previews at:
www.ARVideoNews.com
e-mail kn4aq@arvideonews.com

available only on DVD VIDEO



Fun things!

To ORDER:

www.atvquarterly.com
wa6svt@atvquarterly.com
(909) 338-6887

First, and most important!
Keep informed about amateur television activities, projects, ATV DX information, SSTV, and other amateur radio video related activities, SUBSCRIBE NOW TO:

Amateur Television Quarterly

Rate	USA	Canada/ Mexico	DX
1 year	$20	$22	$29
2 years	$38	$42	$57
3 years	$55	$61	$84
4 years	$71	$80	$111
5 years	$87	$99	$136
Life	$399	$439	$579

ATV Secrets Vol I & II On CD

ATV Secrets is a great place to start your ATV adventure! Volume I has 64 pages, tightly packed with information covering all aspects of getting started, where to find activity,equipment, how to DX, and answers frequently asked questions about power, antennas, vestigial sideband operation and more. Everything the beginner in ATV needs!

Volume II is a mammoth book with 292 pages of technical material. More than 40 authors present over 90 technical projects and theory topics to fully acquaint anyone from novice to expert in the how and what of TV, video, and ham TV. Divided into 11 chapters, the book presents tested projects for all areas of interest in ham TV including antennas, amplifiers, repeaters, receivers, transmitters, video accessories, and more!

Volume II is sold out in the paper version, but available on CD.

ATV Secrets Volume One (paper) $8.95
Shipping USA - $4.50

ATV Secrets I & II on CD $25.00
Shipping USA - $6.00

ATV--DATV
Constructional
Projects

batc shop for
pcbs
components
project support

Members
log-in for
streamer
www.batc.tv

Articles
Contests
News
Events

batc

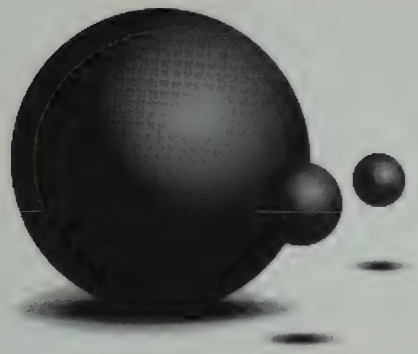
New

Lapel Badge £2.99

Cyber membership £4 P.A.
Subscribe on-Line
www.batc.org.uk/shop

PayPal All major credit cards via our PayPal account

Email chairperson@batc.org.uk



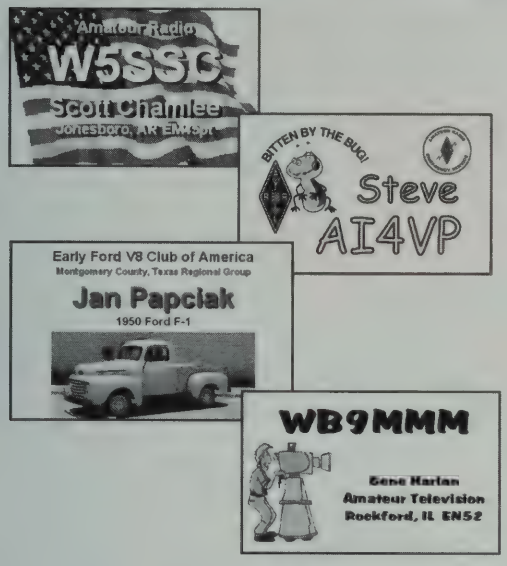
Harlan Technologies

Name Tags by Gene

135 Wilson Ave., Machesney Park, IL 61115-2362
Phone: (815) 543-0894 or (815) 639-9175
Email: atvg@hampubs.com

Visit us on the web: www.hampubs.com

Producers of custom name tags, luggage tags, club badges, Employee Name Tags, Special Event Badges, Child / Stroller / Car Seat Emergency ID's , Amateur Television (Comtech) Transmitters & Receivers, Plus Video Camera's & Accessories



Name Tags

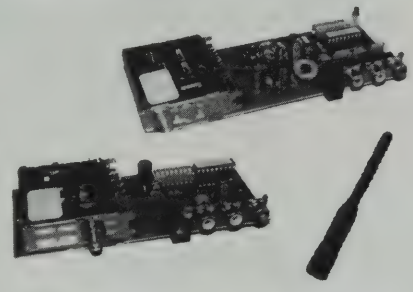
Beautiful, colorful, plastic name badges are available with clip, locking safety pin, magnetic bar, luggage strap, or lanyard. Check our samples at **www.hampubs.com** , or make your own design. Any photo can be used, such as a club logo or we have many stock pictures to use as well.

Prices:

Name tag with clip $10.00
Name tag with pin $10.00
Name tag with magnet $12.00
Name tag with lanyard $12.00
Name tag with luggage strap $10.00

Call or Email for Club & Quantity Pricing

Order form available online



Comtech Demo Boards

1.2 GHz ATV Receiver Demo Board
005-0030 $69.95

1.2 GHz ATV Transmitter Demo Board
005-0029 $69.95

2.4 GHz ATV DIP SW Receiver Demo Board
005-0050 $69.95

2.4 GHz ATV PB Receiver Demo Board
005-0046 $69.95

2.4 GHz ATV Transmitter Demo Board
200 mw!!!
005-0049 $99.95

2.4 GHz ATV Transmitter Demo Board
005-0045 $69.95

900/1200 MHz ATV Receiver Demo Board
005-0044 $69.95

900/1200 MHz ATV Transmitter Demo Board
005-0043 $69.95

Cable, 25 ft., camera, power & video
005-0019 $14.95

Cable, 50 ft., camera, power and video
005-0020 $19.95

Power Supply, 12 volt, 300 ma
005-0021 $6.00

Antenna - 1.2 GHz Rubber Duck
005-0048 $9.95

Antenna - 2.4 GHz Rubber Duck
005-0047 $9.95

18 MHz IF Filter
D480A $5.00

More available online

Name: _____

Call Sign: _____ Email: _____

Address: _____

City: _____ State: _____

Zip Code: _____ Phone: _____

Part Number:	Quantity:	Cost Each:	Total:

VISA MasterCard AMERICAN EXPRESS DISCOVER

Sub Total:	
Sales Tax (IL only 8.25%)	
Shipping:	
Total:	

Shipping:
$7.50 - 1st Item
$2.50 each Additional Item

Credit Card Number: _____

Expiration Date: _____

ATV DX - Aug. 2nd

- Bryan Dygert KC8LMI

ATV Band Opening early am Tuesday, Aug 2 as received at KC8LMI:

K8IGU 80.6 miles
KD8KCF 67.2 miles
KD0FW 572.7 miles
K8DMR/r 81.0 miles
K8DAC/r (1277.25) 72.5 miles
N9XHU 326.7 miles
W8URI 150.4 miles
WB8LGA 156.2 miles

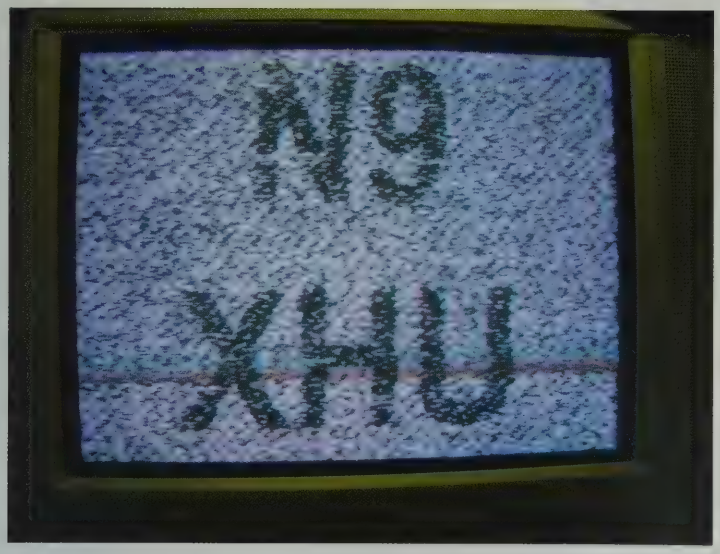
Not pictured but worked-seen:

KA8MFD P3 148.4 miles
W4HTB P2 389.8 miles
W8ZCF P4 229.1 miles
W8PU P4 213.7 miles
W9UIJ P3 263.1 miles
W9ZIH P4 236.1 miles
WR8ATV/r p3 182.0 miles

Massive band opening over the Midwest - August 2nd, 2011
from: aprs.mountainlake.k12.mn.us

W9ZIH in IL as received by KD0FW in MO
496 miles

KD0FW as received by KC8LMI
572.7 miles



N9XHU as received by KC8LMI
326.7 miles

WB8LGA as received by KC8LMI
156.2 miles

Cont. on Page 26

bob
basic overlay board

Decade Engineering's fourth generation low-cost video information overlay generators make last century's 'OSD' products look antique.

BOB-4 and XBOB-4 let your micro-controller or PC display text and vector graphics on standard TV monitors. With huge user-definable character sets, BOB-4 also supports bitmap graphics and multiple languages. BOB-4 generates background video on-board, or automatically genlocks to your video source and superimposes graphics over the image. Printable characters and commands drive BOB-4 through a fast RS-232 style port, much like a serial terminal or printer.

NTSC and PAL video standards are supported via software command. The free BOB-4 Conscriptor PC program simplifies configuration and font management.

XBOB

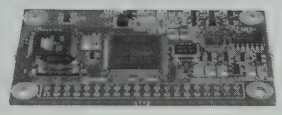
Display text and graphics from your PC on standard TV monitors.

- Simple hookup; requires just 9-12VDC, RS-232 data, video I/O
- Prints plain ASCII text in default configuration
- Display density up to 480x240 (NTSC) or 480x288 (PAL)
- Stand-alone operation for video ID, target reticle, etc.
- Automatic vertical scrolling
- Text crawl (single-line smooth horizontal scroll)
- Expanded memory for custom fonts & bitmap graphics

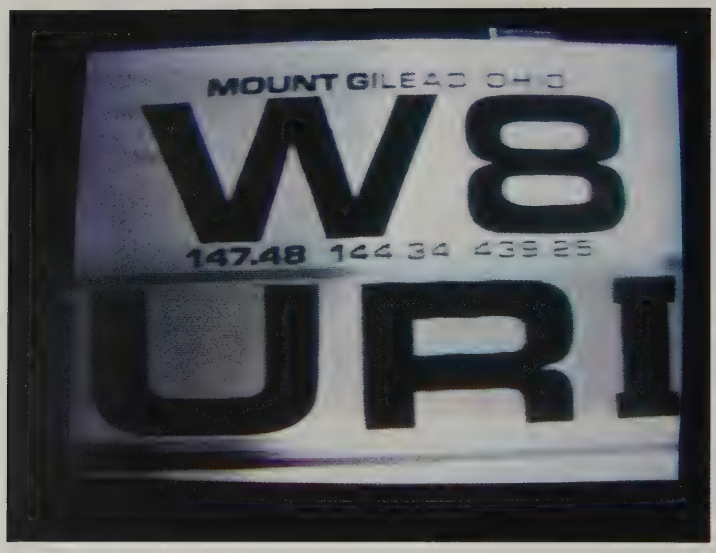
bob-4h

Display text and graphics from your microcontroller on standard TV monitors.

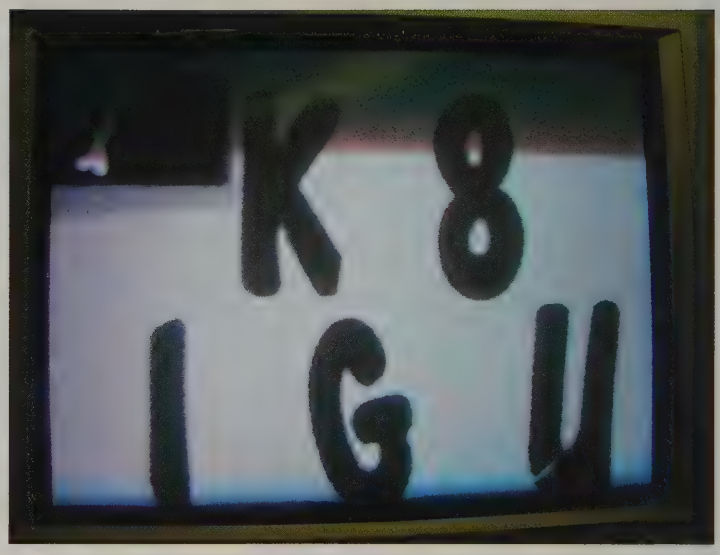
- Tiny and rugged; industrial temperature option
- Simple hookup; requires just 5VDC, data, video I/O
- Asynchronous 'TTL-232' and SPI control ports
- Prints plain ASCII text in default configuration
- Display density up to 480x240 (NTSC) or 480x288 (PAL)
- Text crawl (single-line smooth horizontal scroll)
- Off-board memory expansion for fonts & bitmap graphics
- Software-controlled digital outputs (5)



DECADE ENGINEERING
Ph: 503-743-3194 Fax: 503-743-2095 Turner, OR, USA **www.decadenet.com**



W8URI as received by KC8LMI
150.4 miles

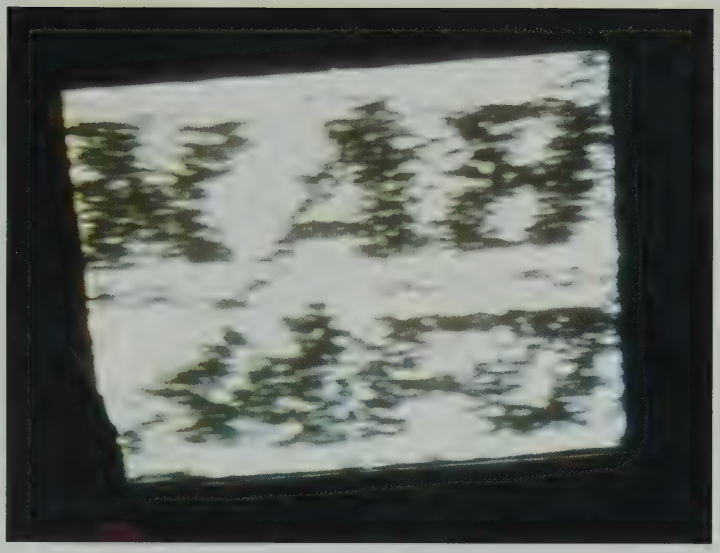


K8IGU as received by KC8LMI
80.6 miles

K8DMR/r as received by KC8LMI
81.0 miles

K8DAC/r as received by KC8LMI
1277.25 MHz - 72.5 miles

KC8LMI as received by W4HTB in KY
496 miles



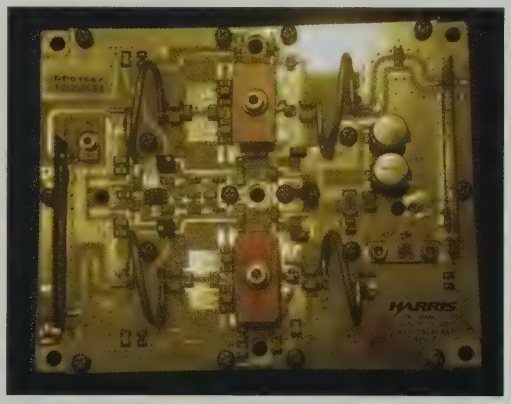
KA8MFD as received by W4HTB in KY
312 miles

KD8KCF as received by KC8LMI
67.2 miles

ATVQ

"New" working LDMOS FET broadcast transmitter (full legal ham power) amplifier modules. The modules run on 32 volts but can run on 28 volts at a bit less power output.

Complete module - $400

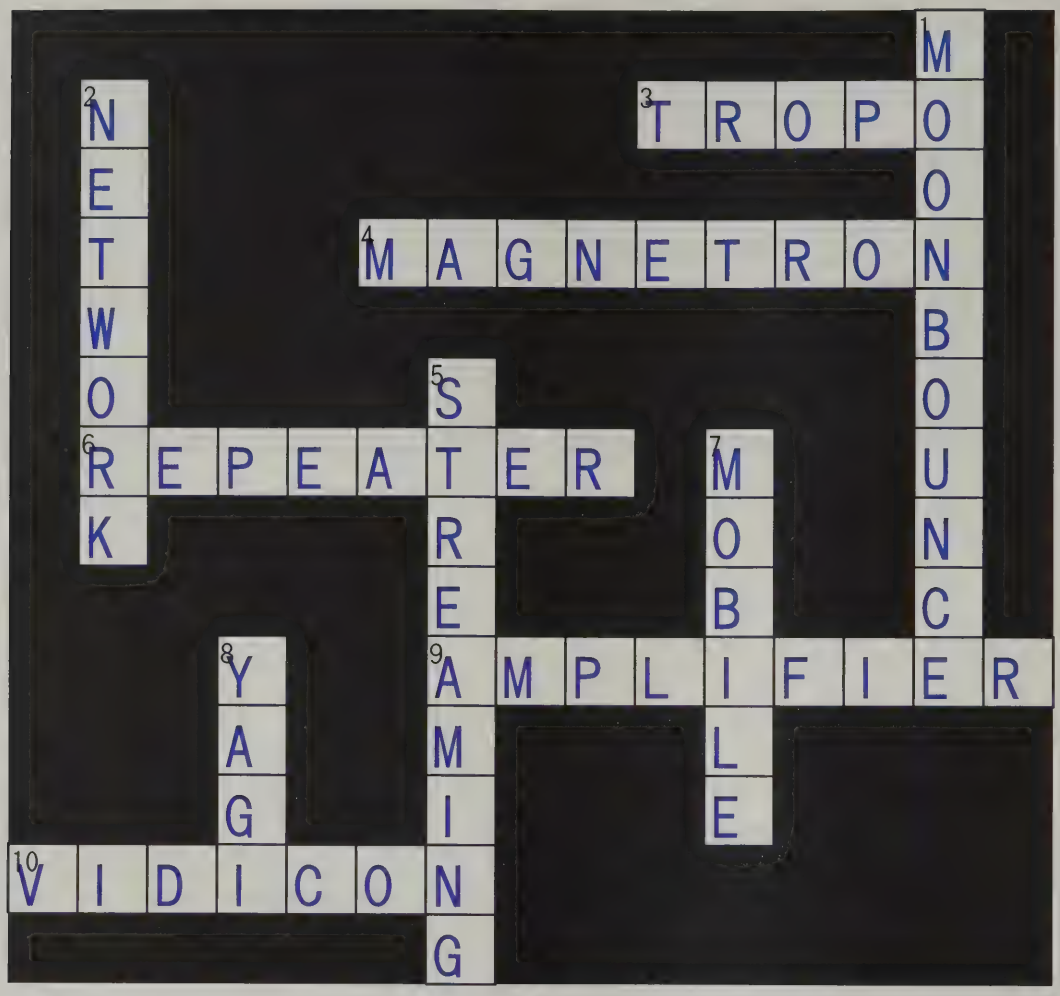


Invididual pallet amplifier boards for *$50 each*
(modifiable to 70cm band)
100 watts linear output on DATV.
400 watts peak sync power analog ATV.

To order contact Mike WA6SVT:
wa6svt@aol.com or **(909) 338-6887** .

Operating ATV

- Bill Brown WB8ELK



Across

3 Band opening when the weather is just right

4 It can microwave your food or transmit video

6 Getting ATV from point A to B may need this

9 Give your signal a boost

10 Before the CCD there was this

Down

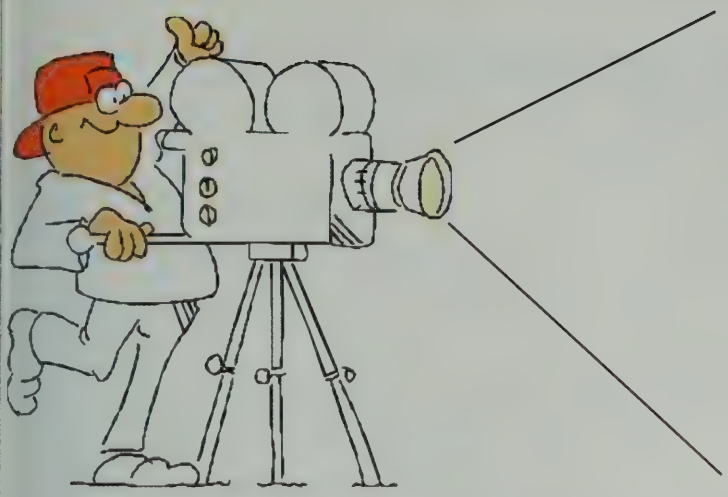
1 SSTV was recently sent via EME also known as?

2 The N in ATN

5 Video on the Internet

7 Taking ATV to the road

8 Elemental way to see those weak ones



ADVERTISE IN ATVQ!

ATV'ers are hams that build projects more than other hams. They have a varied background ranging from technician to engineer, and just might see a need for your product in their regular job as well as in their hobby. I hope to hear from you soon.

Please call TODAY!

Mike Collis - WA6SVT - Advertising
RESERVE YOUR SPACE TODAY!
1-909-338-6887 - voice
email: wa6svt@atvquarterly.com

DEADLINES			
COVER DATE	COPY DEADLINE	TO PRINTER	MAILING DATE
WINTER	JANUARY 1	JANUARY 15	FEBRUARY 1
SPRING	APRIL 1	APRIL 15	MAY 1
SUMMER	JULY 1	JULY 15	AUGUST 1
FALL	OCTOBER 1	OCTOBER 15	NOVEMBER 1

AD RATES Effective November 19, 2004		
	INSERTIONS PER YEAR	
SIZE	1-3	4 up
FULL PAGE COLOR	$650	$500
FULL PAGE B&W	$160	$140
ADDITIONAL COLORS/PAGE	$100	$100
1/2 PAGE B&W H or V	$110	$80
1/4 PAGE B&W H or V	$85	$55
1/6 PAGE B&W H or V	$55	$38

Multi-page ads are billed at the combined rate based on frequency.
Covers are reserved for COLOR ads.
All typesetting and layout charges for non-camera ready ads will be added.
Covers II, III, IV $30 extra.
If negatives are not provided for color ads, add $50.

While we will try to adhere as close as possible to the above dates, we reserve the right to adjust as needed.

If material is going to be late, please call to check if it will meet our schedule. We will try to accommodate everyone as best as we can.

Camera ready art or negative film right reading down is acceptable.

Trim Size: 8 1/2 x 10 7/8
Bleed Size: 1/8" beyond trim
Live matter: 1/4" within border

ATV Quarterly reserves the right to reject any advertising which is not in keeping with the publishers standards. Previous acceptance of any ad will not prevent ATV Quarterly from exercising the right to refuse the same advertisement in the future. Advertising orders are subject to the terms on the current rate card. Advertisers assume all responsibility and liability for any claims arising from advertisements and will protect the publisher from same.

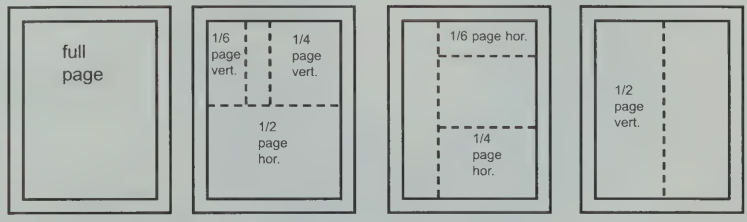
ATV Quarterly will position ads in ATVQ at its discretion except in the case of preferred positions specifically covered by contract or agreement.

If, for any reason, the publisher fails to publish an advertisement, it will not be liable for any costs or damages, including direct or inconsequential damages.

Terms: All accounts not pre-paid are billed net 30 days. All accounts over 30 days are billed at 1 1/2% per month. Prompt payment is always appreciated.

RESERVE YOUR SPACE TODAY!
1-909-338-6887

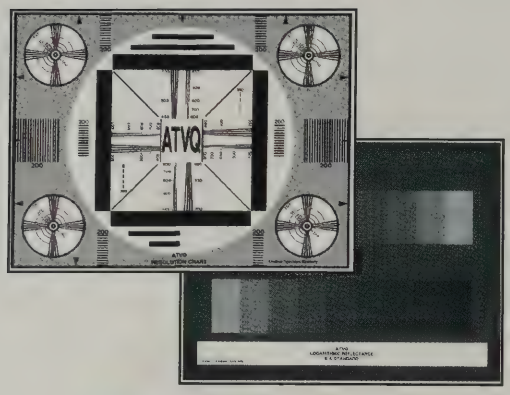
AD SIZES	VERTICAL		HORIZONTAL	
	Width	Height	Width	Height
FULL PAGE	7"	10"	---	---
1/2 PAGE	3 1/2"	10"	7"	5"
1/4 PAGE	3 1/2"	5"	5"	3 1/2"
1/6 PAGE	2 1/4"	5"	5"	2 1/4"



Amateur Television Quarterly

published by ATV Quarterly
P.O. Box 1594, Crestline, CA 92325
tel (909) 338-6887
Internet: http://www.atvquarterly.com email: wa6svt@atvquarterly.com

FULL COLOR TEST CHART



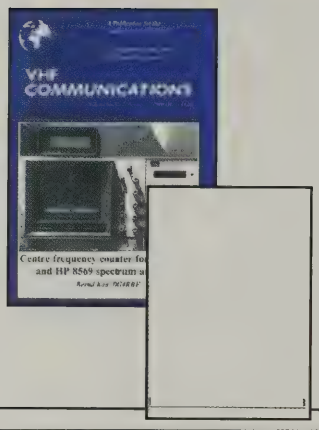
Four charts including:

COLOR BARS
RESOLUTION
GREY SCALE
REGISTRATION

To Order:

(909) 338-6887
www.atvquarterly.com

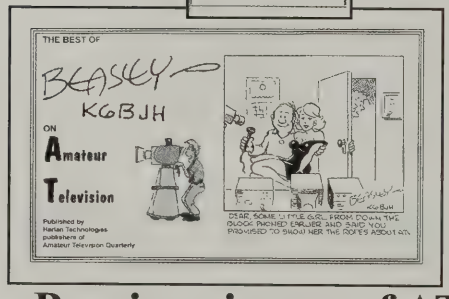
Only $5.00 plus free shipping (USA)



VHF Communications

A quarterly publication from KM Publications in England that is a must for the technically minded. Lots and lots of articles for those that build projects in the VHF and above range.

One year $44.00 - airmail, $37.00 - surface



The Best of Beasley - K6BJH - On Amateur Television

A collection of all the cartoons that have appeared in ATVQ over the years plus many more.

Regular $8.95 - **Special $5.00 plus $3.00 shipping (USA)**

Previous issues of ATVQ

There are many super articles in the previous issues of ATVQ. We keep a list on ***www.atvquarterly.com*** what we still have in paper. You will also find a complete index of articles so you can find just what you want.

Single issues $4.95 - Special 10 issues for $30.00 - Shipping in the USA included!

ATVQ now on DVD

- The complete set of ATVQ from the very beginning (1988) up to the current issue.

- Includes Best of Beasley

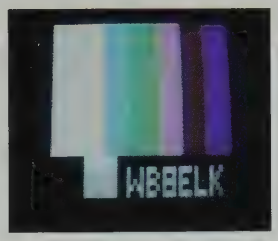
$69 for the complete set with free shipping in the USA - ($4 shipping to Canada $8 DX shipping)

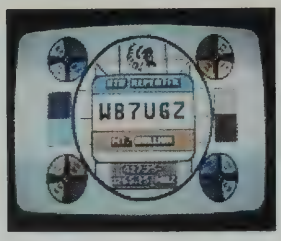
VDG-1 Video ID EPROMs

Elktronics
107 Woodlawn Drive
Madison, AL 35758

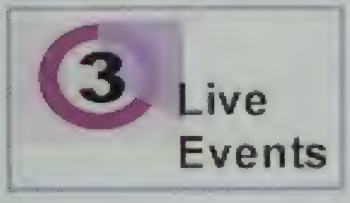
email: wb8elk@aol.com
www.elktronics.com

$20 EPROM includes 4 screens



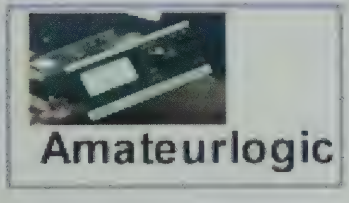


batc.tv
Digital Television



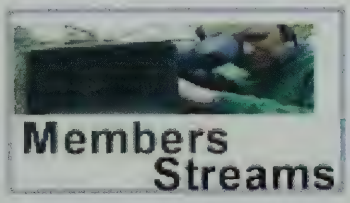
Join BATC for just £4 per year
and you get :-

CQ-TV magazine in Cyber format
sent to you PC as soon as it is available



Your own video stream on www.batc.tv

Join now via PayPal
at www.batc.org.uk



visit for more information
www.batc.tv
www.batc.org.uk
www.batc.org.uk/forum

Annual Publisher's Statement

UNITED STATES POSTAL SERVICE

Statement of Ownership, Management, and Circulation
(All Periodicals Publications Except Requester Publications)

1. Publication Title	2. Publication Number	3. Filing Date
AMATEUR TELEVISION QUARTERLY	003-352	10-01-2011
4. Issue Frequency	5. Number of Issues Published Annually	6. Annual Subscription Price
FOUR TIMES PER YEAR	4	$26

7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4®)
ATVQ, P.O. BOX 1594, CRESTLINE, CA 92325 — Contact Person: [illegible] — Telephone (Include area code): [illegible]

8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer)
ATVQ, P.O. BOX 1594, CRESTLINE, CA 92325

9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank)

Publisher (Name and complete mailing address)
AMATEUR TELEVISION QUARTERLY, P.O. BOX 1594, CRESTLINE, CA 92325

Editor (Name and complete mailing address)
MICHAEL COLLIS, P.O. BOX 1594, CRESTLINE, CA 92325

Managing Editor (Name and complete mailing address)
WILLIAM BROWN, 107 WOODLAWN DR., MADISON, AL 35788

10. Owner (Do not leave blank. If the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock. If not owned by a corporation, give the names and addresses of the individual owners. If owned by a partnership or other unincorporated firm, give its name and address as well as those of each individual owner. If the publication is published by a nonprofit organization, give its name and address.)

Full Name	Complete Mailing Address
WILLIAM BROWN	107 WOODLAWN DR., MADISON, AL 35788
MICHAEL COLLIS	P.O. BOX 1594, CRESTLINE, CA 92325

11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities. If none, check box → ☒ None

Full Name	Complete Mailing Address

12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one)
The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes:
☒ Has Not Changed During Preceding 12 Months
☐ Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement)

PS Form **3526**, September 2007 (Page 1 of 3 (Instructions Page 3)) PSN 7530-01-000-9931 **PRIVACY NOTICE**: See our privacy policy on www.usps.com

13. Publication Title: AMATEUR TELEVISION QUARTERLY	14. Issue Date for Circulation Data Below: FALL 2011	
15. Extent and Nature of Circulation: WORLD WIDE	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total Number of Copies (Net press run)	1000	1000
b. Paid Circulation (By Mail and Outside the Mail) (1) Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	398	406
b. Paid Circulation (By Mail and Outside the Mail) (2) Mailed In-County Paid Subscriptions Stated on PS Form 3541 (Include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	3	3
b. Paid Circulation (By Mail and Outside the Mail) (3) Paid Distribution Outside the Mails Including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS®	50	80
b. Paid Circulation (By Mail and Outside the Mail) (4) Paid Distribution by Other Classes of Mail Through the USPS (e.g. First-Class Mail®)		
c. Total Paid Distribution (Sum of 15b (1), (2), (3), and (4))	451	480
d. Free or Nominal Rate Distribution (By Mail and Outside the Mail) (1) Free or Nominal Rate Outside-County Copies included on PS Form 3541		
d. Free or Nominal Rate Distribution (By Mail and Outside the Mail) (2) Free or Nominal Rate In-County Copies included on PS Form 3541		
d. Free or Nominal Rate Distribution (By Mail and Outside the Mail) (3) Free or Nominal Rate Copies Mailed at Other Classes Through the USPS (e.g. First-Class Mail)		
d. Free or Nominal Rate Distribution (By Mail and Outside the Mail) (4) Free or Nominal Rate Distribution Outside the Mail (Carriers or other means)		
e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3) and (4))	0	0
f. Total Distribution (Sum of 15c and 15e) ▶	451	480
g. Copies not Distributed (See Instructions to Publishers #4 (page #3)) ▶	549	520
h. Total (Sum of 15f and g) ▶	1000	1000
i. Percent Paid (15c divided by 15f times 100) ▶	100%	100%

16. Publication of Statement of Ownership
☐ If the publication is a general publication, publication of this statement is required. Will be printed in the FALL 2011 issue of this publication. ☐ Publication not required.

17. Signature and Title of Editor, Publisher, Business Manager, or Owner: [signature] OWNER/PARTNER — Date: OCTOBER 1, 2011

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

PS Form **3526**, September 2007 (Page 2 of 3)

Thanks to all the fine stores that carry Amateur Television Quarterly

Burnaby Radio Comm Ltd.
4257 E. Hastings St.
Burnaby, BC
Canada V5C 2J5

Gigaparts, Inc.
1426B Paramount Drive
Huntsville, AL 35806

Ham Radio Outlet
1939 W. Dunlap Ave.
Phoenix, AZ 85021

Ham Radio Outlet
6071 Buford Hwy
Atlanta, GA 30340

Ham Radio Outlet
224 N. Broadway
Salem, NH 03079

Ham Radio Outlet
1525 W. Magnolia Bl.
Burbank, CA 91506

Ham Radio Outlet
933 N. Euclid St.
Anaheim, CA 92801

Radio City
2663 County Rd I
Mounds View, MN 55112

The Ham Station
220 N. Fulton Ave.
Evansville, IN 47719

Do you know of a store that would like to carry ATVQ? Please let us know and we will contact them.

ADVERTISERS INDEX

Amateur Television Quarterly 21,29,30
ATV Research .....Cover 4
ARVideo News.....20
CQ-TV BATC.....22,31
DCI.....Cover 3
Decade Engineering.....25
Elktronics.....31
Gigaparts .....Cover 2
the HAM STATION 34
Harlan Technologies.....23
Intuitive Circuits, LLC 3,5
KH6HTV Video.....20
M2 Inc 34
R.F. Connection.....5
TV-Amateur 3
VHF Communications 3
WA6SVT.....27

Please mention that you saw it in
Amateur Television Quarterly!

CONTRIBUTORS GUIDE

Preferred method of receiving articles is from **Microsoft Word**, **Open Office** or ASCII **Text**, followed by **typewritten** or **hand written** (clearly). Diagrams or pictures (B&W or Color) can be sent in hard copy, or if you scan them in, save to TIF, JPG or BMP formats (actually I can read about anything). If you send a computer disk, make sure it is PC (not MAC) format. When sending in digital photos or scanned photos, please send us the highest possible resolution for best quality when we print it.

Article submissions can be sent to:

Bill Brown WB8ELK
107 Woodlawn Dr.
Madison, AL 35758

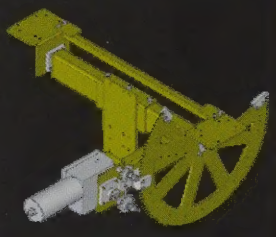
or to our email address: **wb8elk@atvquarterly.com**
Also note our web page address: **http://www.atvquarterly.com**

M2
ANTENNA SYSTEMS, INC.
The New American Antenna

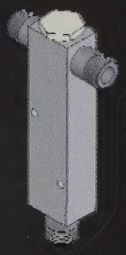
See, and be seen...
...let M2 show you how!

WORLD CLASS PRODUCTS

ANTENNAS



POSITIONERS



ACCESSORIES

M2 Antenna Systems, Inc.
4402 N. Selland Ave.
Fresno, CA 93722
Phone (559) 432-8873
www.m2inc.com

Payment for Technical Articles

ATVQ will pay for certain articles that it publishes. I will outline the policy here, but it will be subject to change as needed to make sure that ATVQ continues to be an ongoing publication. ATVQ will pay $25.00 for technical articles that are published and are a minimum of 2 pages. While this is not a great amount, I hope it will encourage more technical type articles to be written. Exceptions will be articles that are written by a manufacturer/seller of equipment that is being written about. While I do not want to discourage this type of article, the article itself is an advertisement of the product. Articles from clubs will be encouraged, and I would expect they would like to share their information with the ATVQ readership. Information gathered from the Internet will not be paid for and is mostly small filler items.

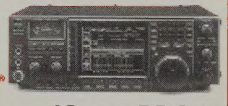
Ideas

Do you have an idea for an article that you've said to yourself that you wanted to write, but never did. Feel free to check with us to see if it is of interest, or write and send it in. No guarantees that it will get published, but if you don't try, you will never know. I'll be looking to see what you can do!

Advertise in ATVQ
Reach a new audience!
Call Today
909-338-6887

IC-746PRO
HF/6m/2m, 100w

ICOM



IC-756 PRO III
HF/6m, 100w,
32 Bit IF-DSP

IC-U82
IC-V82
IC-V82 VHF Ver.
IC-U82 UHF Ver.

Celebrating 27 Years

IC-V8000
2 meter, 75w

IC-2820H
2m/440MHz

IC-7800
160-6m@200w, All Mode

IC-7000
160m-10m/6m/2m/
70cm/IF DSP/Color
TFT Display

IC-706 MKIIG
160- 10m/6m/2m/70cm

the HAM STATION
P.O. Box 6522
220 N. Fulton Avenue
Evansville, IN 47719-0522
Store Hours (cst)
Mon-Fri 8AM-4PM
800-729-4373
812-422-0231
FAX 866-810-9292
www.hamstation.com
e-mail:sales@hamstation.com
LARGE SELECTION OF USED GEAR

Prices Do Not Include Shipping.
Price and Availablity Subject to
Change Without Notice
Most Orders Shipped The Same Day

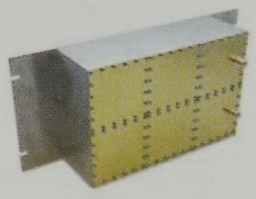
We carry MFJ and M2inc ATV products

DCI
digital communications

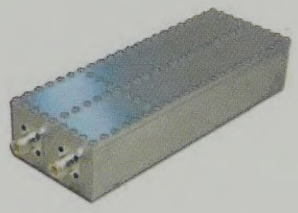
Pure Performance – Trusted Partner

About Us

Digital Communications Inc.(DCI) specializes in the design and manufacturing of bandpass filters, low pass filters, Wi-Fi filters, multiple-window filters, combiners, broadband duplexers, and CDMA repeaters in the 30 MHz to 6 GHz range.

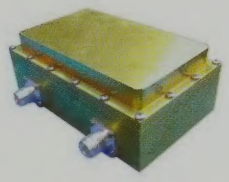


Whether you require filters from our large inventory of commonly made filters or a custom design, our high performance products are made with steep skirts, low loss, low SWR and we can accommodate low and high power requirements.



Our filters are rugged, reliable and designed to last. They are made from extruded aluminum and brass to maintain the highest degree of tolerance and quality. We mill all our products in house on state of the art milling machines.

Skilled engineers and sales professionals work closely with customers to come up with specific solutions to unique RFI problems. Our products are premium quality, manufactured on site and competitively priced.

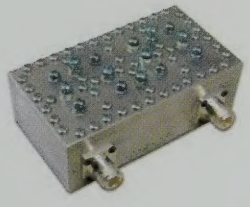


Our customers include amateur radio, amateur television, cellular providers, digital television companies, FM broadcasting stations, trunking specialists, Wi-Fi providers, the transportation industry, medical facilities, the military, audio recording, and satellite groups.

"I have used DCI filters in designing and building Amateur TV Network repeaters, master receive multi couplers to provide ATV, 440-445 MHz amateur, 450-470 MHz land mobile at commercial radio sites and mask filters for broadcast TV. I highly recommend this company…

"Michael Collis WA6SVT broadcast engineer and ATVer".

Let us Help you with your project. Contact us:



Web: www.dci.ca
Email: info@dci.ca

Phone: (800) 563-5351
Fax: (613) 258-7418

KAVVERI telecom products limited

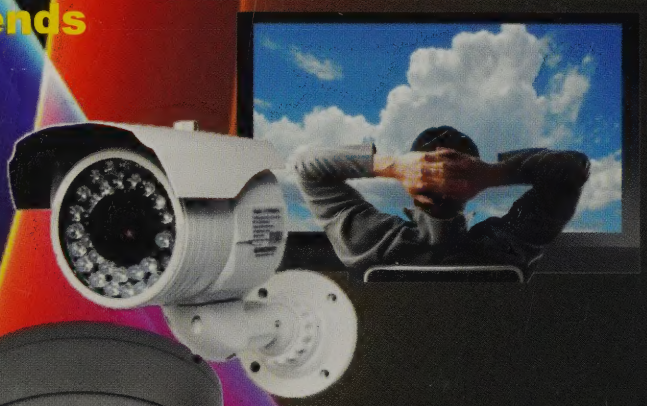
Serving the video needs of amateurs and industry since 1964

ATV Research Inc.

* Cameras
* DVR's
* Monitors
* Modulators
* Wireless
* IP Video
* Amplifiers
* Filters
* Demodulators
* Converters
* Cable Headends

and much more

Keep tuned to the latest in new products, sales, technical information and more by joining our Weekly Eblast Group. Just send us your email ...or fax or phone it to us.



Stay abreast of the latest advances in video technology by visiting us on the web.

* Daily Updates *

www.atvresearch.com

* All New Site
* 24/7 Shopping Cart
* Over 75 years tech expertise

Toll Free: (800) 392-3922
General Ph: (402) 987-3771
24 hr fax: (402) 987-3709
Website: www.atvresearch.com
Email: sales@atvresearch.com